

Chico

**Golden  
Empire  
Amateur  
Radio  
Society, Inc.**

www.gearsww6rhc.org

"Dedicated to Public Service"

# THE RADIATOR

W6RHC  
IRLP #8170

P.O.Box 202 Chico, CA 95927

December 2022 Newsletter

GEARS Founded August 13, 1939

## GEARS News

It's that time of year, Christmas parties and elections of new officers at our December meeting.

Here are the nominations for the GEARS Board of Directors:

President – Kent Hastings WA6ZFY

Vice president – Jamie Johnson KN6PWW

Treasurer – Jim Matthews K6EST

Secretary – Tony Stefanetti KN6UNT

Director – Larry Mitchell KF6NCX

Director – Rich Astley N3UOR

Director – Bennett Laskey K6CEL

The election will be held at the December meeting. This meeting will be our Christmas party with an optional gift exchange. If you wish to participate bring a wrapped ham radio gift valued at approximately \$20. We will have a potluck, bring a food item to share. Meeting will be at the Chico Public Library, Monday December 17<sup>th</sup>. Doors open at 6pm, meeting at 7pm.

At our last meeting we discussed antennas. In this newsletter I've included plans for a stealth antenna recommended by Michael Favor N6FAV.

Our monthly Board meetings are held via Google Meetings online, if you would like to attend please email me for the link.

Thanks very much for all the member who have paid 2023 dues. Your support helps keep amateur radio alive in the North State.


We are always looking for ideas and suggestions for GEARS meeting topics. We are open to guest speakers too. If you or you know someone has something to share with the club please let us know.

Best wishes for a happy holiday season.

'73

Jim Matthews K6EST  
jiminchico@yahoo.com

## December 2022 Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 7:30pm Simplex Net	2	3
4 8pm OARS Net <b>VEC Testing 2pm</b>	5 7pm GARS Net 8pm ARES Net <b>7pm GEARS Board Meeting</b>	6 7pm PARS Net 7:30pm GEARS Net	7	8 6:30 pm PARS meetings 7:30pm Simplex Net	9 7pm OARS meeting 7pm GARS meeting	10 <b>9am Chico Breakfast</b>
11 8pm OARS Net	12 7pm GARS Net 8pm ARES Net	13 7pm PARS Net 7:30pm GEARS Net	14	15 7:30pm Simplex Net	16	17
18 8pm OARS Net	19 <b>6pm GEARS Meeting</b> 7pm GARS Net 8pm ARES Net	20 7pm PARS Net 7:30pm GEARS Net	21	22 7:30 Simplex Net	23	24
25 	26 7pm GARS Net 8pm ARES Net	27 7:30pm GEARS Net	28	29 7:30 Simplex Net	30	31 9am OARS Breakfast

**VEC Testing**, FCC License Exam available by appointment. For information or registration call Tom Rider, W6JS 530-514-9211

**Chico Breakfast** 2nd Saturday 9am Farmers Skillet Cohasset Rd, Chico

**GEARS Board Meeting** 1st Monday 7pm by Google video meetups.

**PARS Meeting** 2nd Thursday 6:30pm, doors open 6pm Old Magalia Community Resource Center

**OARS Meeting** Second Friday of the month, St. Pauls Episcopal Church Hall, Oroville.

**GARS Meeting** Second Friday of the month, Lutheran Church Hall, Artois.

**GEARS Meeting**, Doors open 6pm, meeting 7pm at Chico Public Library, 1108 Sherman Ave, Chico

**OARS Breakfast** 4th Saturday of the month, at Cornucopia of Oroville.

### NETS:

OARS Club Net Sunday 8pm 146.655 Mhz - PL 136.5

GARS Club Net Monday, 7:00 pm 147.105 MHz + PL 110.09, secondary: 146.850 MHz-PL 110.9

Yuba Sutter Club Net Monday 7pm 146.085 MHz + PL 127.3

GEARS Club Net Tuesdays 7:30 PM 146.850 MHz - PL 110.9

PARS Club Net Tuesday 7pm 145.290 - PL 110.9

Simplex Net Thursday 7:30 p.m. 146.52 no tone

Yuba Sutter ARES Net Thursdays 7pm 146.085 MHz + PL 127.3

Sacramento Valley Traffic Net Nightly 9:00 PM 146.850 MHz - PL 110.9

## The Rooster-Tenna

By John Portune W6NBC

Fully functional weather vane conceals an efficient 2-meter base-station antenna. Your Neighbors and HOA won't know it's there and they will love the rooster-vane.

The formula for an antenna that won't gather complaints is, make it "look like it belongs." Weather vanes are almost always welcome on rooftops. You only need to know that your weather vane "just happens" to also be a high-performance 2m antenna. A neighbor asked me where I got mine; she wants one. My mobile home park recreation center sports a similar looking vane. A Rooster-Tenna is great disguise.



In QST August 2005, I presented an earlier rooster-vane antenna. This new version is much improved, Figures 1&2. The antenna is now a wide-spaced parallel-fed horizontal folded dipole bent into a flattened cube – technically, a skeleton slot. It's built around two horizontal square aluminum tubing rings, 11½ in. on a side, separated by 5½ in. (tubing center to center) and electrically connected by three vertical interconnect sections.

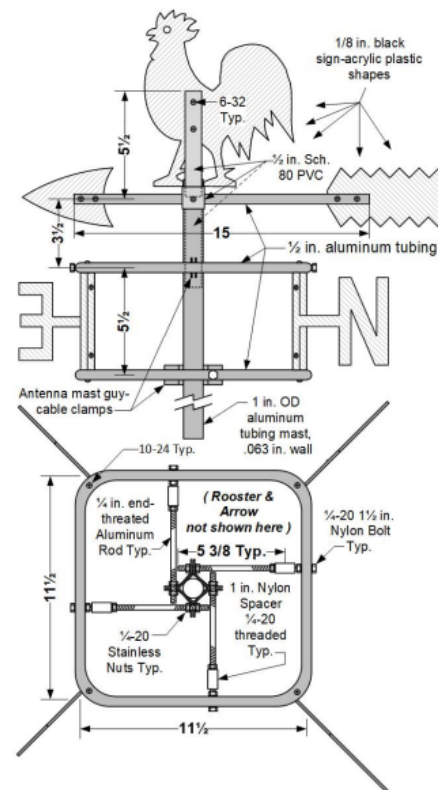
The rings are bent from rigid ½ in. OD aluminum tubing. Hardware-store soft copper or aluminum tubing is okay but is not as durable. Local metals dealers, DX engineering, metalsdepot.com and onlinemetals.com stock it. At the corners, the rings are held apart by four ½ x 5 in. square acrylic posts, which also mount the vane's N-S-E-W letters. The posts are tapped lengthwise for 10-24 screws through the rings. The mast is 1 in. thin-wall (.063 in.) aluminum tubing. Only the size and spacing of the rings, shown in Figure 2, need what is shown. The other dimensions are only suggestions.

The vertical sections that connect the rings, are made from ¼ in. soft aluminum tubing. The plain ones, left and center in Figure 3, are the ends of the folded dipole. There is no RF current in the rings between the ends.

One adjusts the antenna's SWR by moving the vertical section on the right, the one that contains the feedpoint. The operating frequency is adjusted by moving the section on the left

For complete plans and directions see:

<https://w6nbc.com/articles/2020-09QSTroostertenna.pdf>



# BOGged Down: Receive Antennas on the Ground

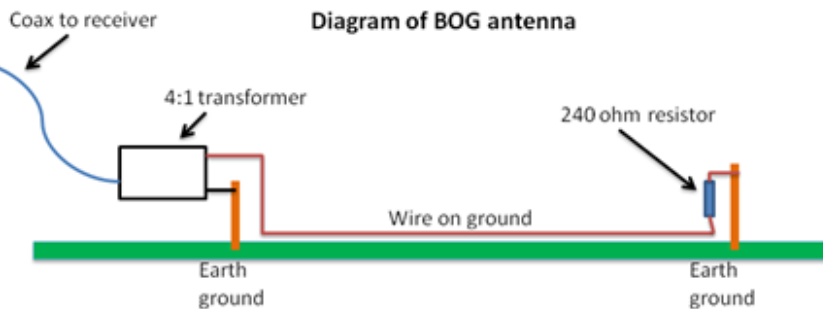
By Mark Haverstock, K8MSH

Many hams I know who are serious 160 and 80 meter operators use Beverage antennas to optimize HF reception. These antennas often make the difference in pulling a weak signal out of the noise.

But conventional Beverage antennas are completely out of the question for many of us who live on small lots. They're generally hundreds of feet long and need to be installed 5 to 10 feet above ground level. To work the low bands, we really need antennas like these when operating in noisy urban environments—the Catch 22 is we don't have the room. But there are alternatives which will fit into smaller spaces.

## BOG—Beverage on Ground

An adaptation of the conventional Beverage antenna, this configuration places the wire on or slightly in the ground. Antennas installed on the ground are not a new idea. Several sources suggest the very first Beverage antenna made by Dr. Harold H. Beverage himself was in fact a BOG.



Due to the effects of the earth, these wire receive antennas only need to be a straight run of around 160 to 200 feet long because the overall electrical length of the antenna is nearly twice as long as its physical length. Like the conventional Beverage, it's terminated with a resistor—in this case 240 ohms. Both the resistor at the far end of the wire and the BOG transformer feed point unit are each connected to separate ground rods.

A 4:1 transformer matches the 50-ohm coax to the BOG. Homebrew transformers can be constructed with ferrites and several turns of wire. A ready-made version by KD9SV Products, BOG Beverage-On-Ground Antenna Transformer, is available from DX Engineering. The Unified Microsystems BevFlex-4X includes a flexible set of components for building a BOG and other varieties of receive antennas.

It's strongly recommended that you install a common-mode choke in the feed line with a ground stake at a distance of about 33 feet from the antenna feed point.

Setup is simple and keeps you on the ground with no ladders or tower climbing involved. There has to be enough flat ground to accommodate the antenna. Jogs and bends can affect your antenna pattern, but it will still work. The wire needs to be insulated (size is not critical, but 14 to 16 AWG seems to work well).

To keep people and pets safe (and your antenna!), place the wire as close to the ground as possible. Anchor your wire with metal landscape staples about every 3 feet, which will hold the wires in place until lawn roots grow over them. Soon, the wire and staples disappear! Just remember to increase your lawnmower cutting height for a few weeks to let everything take hold.

You're not getting a super signal grabber here. BOG antennas don't produce any appreciable gain—figures are typically from -20 to -10 dBi. Instead, good weak signal reception happens by improving the signal-to-noise ratio (S/N) of the received signals. This is not by just having a higher gain antenna (more S in the S/N equation), but also by reducing noise (lower N in the S/N).

If needed, the receive signal can be boosted with a good RX preamplifier. Sometimes the one on your radio will be sufficient, or you can choose an outboard preamp such as the DXE RPA-2. Signal levels

can also be improved by mounting the BOG an inch or two above ground level when it can be protected from being a tripping hazard.

A variant of the BOG is called the Snake antenna made from coax. It can be any coax you happen to have lying around like RG-58, RG-59, LMR 240, etc. At the tip, the center conductor must be connected to the braid. Connect a PL-259 plug at the shack end, but leave a gap of about an eighth of an inch in the braid. The braid should be isolated from the chassis of the ATU.

The coax can then be run anywhere. Just lay it on the ground—it does not have to be straight but can be placed in a series of serpentine S's.

### LOG Antenna

“My goodness! My gracious! It's something brand new! A LOG for a BOG is something to do.” Aside from the corny Seuss-like rhyme, a LOG antenna is a BOG with some significant changes.

LOG stands for Loop on Ground, a version of the traditional loop antenna on terra firma. The loop of wire can vary in circumference from about 20 to 150 feet and can be a very space-efficient ground-mounted antenna for reception on the low bands. The shape should be as close to a diamond or square as possible.

The proximity of the wire to the ground makes this antenna very lossy. For reception, however, a lossy antenna is a good thing. Like the BOG, the LOG does a good job of improving the signal-to-noise ratio. Signals need only to break the noise level by a few dB to be received.

The antenna itself is not grounded, and it uses an isolation transformer at the feed point. This provides a near-short circuit at DC on both sides of the transformer, while DC-isolating the antenna from the cable. This isolation also helps to preserve the pattern of the antenna. The coaxial cable shield is grounded at the building entry point, providing some lightning and static protection.

Best results occur when the overall loop length is about 15% of a full wave for the lowest frequency. As shown in the diagram, a 60-foot total length works well for the 2-8 MHz range. It is usable to about 15 MHz, though sensitivity noticeably drops off above 25 MHz. At 100 feet coverage is extended into 160 meters and the upper portion of the AM broadcast band.

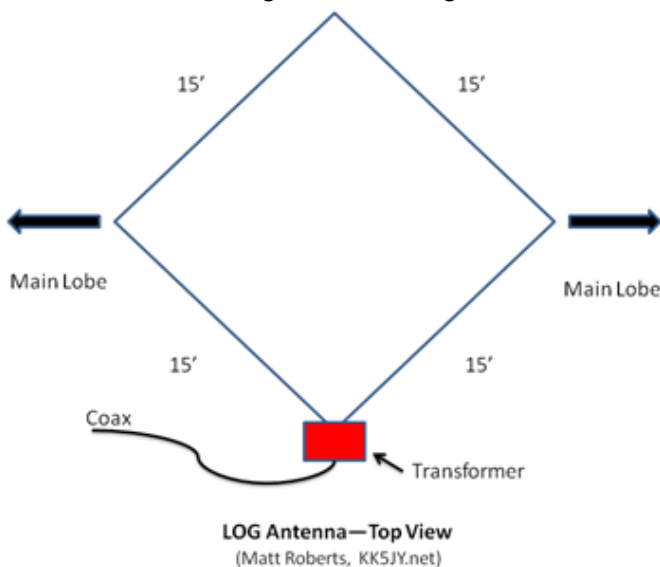
### So What Do You Get for Your Efforts?

Initially it may sound like you've connected to a dummy load because there is no noise and signal levels will be down. But signal-to-noise ratio levels will more than make up for the perceived signal loss. A signal level of -100 dBm is a HOT signal when the noise level is down at -140 dBm. That leaves you 40 dB SNR, a clear signal.

The advantages of using the BOG or LOG are:

Some directivity and a wider bandwidth than resonant antennas. The LOG tends to be somewhat non-directional.

An antenna no one will notice, especially if you follow the installation tips mentioned earlier.





The various types of Beverage antennas will become more useful during Solar Cycle 25 as increasing sunspot activity leads to even weaker signals on 160 and 80 meters.

Even a short Beverage antenna is better than no Beverage! These versions are relatively easy to build and install in limited space.

Better signal-to-noise levels in urban areas with RFI.

In case you were wondering, this isn't a transmitting antenna. Locating the antenna at ground level makes it very lossy, rendering it useless for transmission. For reception, however, a lossy antenna can be a great asset, with the pattern and directivity very helpful at longer wavelengths.

## GEARS Century Members

Dale Anderson, Kent Hastings,  
Bennett Laskey, Jim Van Sickle

*We thank these members for their extra support.*

### GEARS Officers:

President.....Vacant  
Vice-President.....Kent Hastings, WA6ZFY  
Treasurer.....Jim Matthews, K6EST  
Secretary.....Vacant  
Director.....Bennett Laskey, K6CEL  
Director.....Rich Astley, N3UOR  
Past President.....Jim Matthews, K6EST  
VEC Chairman.....Tom Rider, W6JS

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[paypal.me/w6rhc](https://www.paypal.me/w6rhc)

Or by mail to:  
GEARS  
PO Box 202  
Chico, CA 95927

Your dues and contributions support our local repeaters, ARES, and outreach events to keep amateur radio alive in our area. GEARS also makes donations to support other local repeaters.

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